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Rebecca A. Bellas
(Type or print name of person mailing paper)

December 29, 2004
(Date)

Rebecca A. Bellas
(Signature of person mailing paper)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application

Applicant:	Bindra	Art Unit:	1755
Serial No.:	10/657,485	Examiner:	Anthony J. Green
Filed:	September 8, 2003		

Title: HEAT STABLE LAKED MONOAZO RED PIGMENT

DECLARATION UNDER 37 C.F.R. § 1.132

Mail Stop Amendment
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Amrit Bindra, declare and say as follows:

I am a chemist, employed for about the last fourteen years by the Engelhard Corporation, the assignee of the above-identified patent application. During the last fourteen years, I have been involved in various research projects associated with pigments and related technologies. I studied Chemistry at the Australian National

University where I received a Ph.D. degree in 1970; and at the University of Poona, where I received a Ph.D. degree in 1968, a Masters degree in 1964, and a Bachelors degree in 1962.

I am the inventor of the invention described in the above-identified patent application and, therefore, I am thoroughly familiar with the subject matter of the invention.

Certain claims of the above-identified patent application stand rejected for lacking novelty over CAS Registry Database compound #250639-69-1 and the FDA Docket No. 99F-2080.

Experimental tests were conducted by me in order to demonstrate that the claimed pigment is indeed novel and thus different from the compound described in CAS Registry Database compound #250639-69-1 and the FDA Docket No. 99F-2080. Both CAS Registry Database compound #250639-69-1 and the FDA Docket No. 99F-2080 either show or describe 1-naphthalenesulfonic acid, 2-[(2-hydroxy-6-sulfo-1-naphthalenyl)azo] strontium salt by word or structural formula.

The claims and the cited art describe a compound having a similar chemical formula. However, the claims of the invention describe a crystalline red pigment while the CAS Registry Database compound #250639-69-1 and the FDA Docket No. 99F-2080 describe a non-pigmentary, poorly crystalline compound. Crystallinity is NOT reflected in a chemical structural formula. In other words, the claimed pigments are different from the compounds of the cited art because the claimed pigments have a different crystal structure from the compounds of the cited art.

A compound of the claims was made by preparing a diazo slurry by dissolving 13.4 parts of 2-aminonaphtahlene-1-sulfonic acid in 140 parts of water and 4.8 parts of 50% sodium hydroxide solution. The solution was cooled to 0° C. by the addition of ice

and diazotized by the addition of 17 parts of a 25% solution of sodium nitrite and 22 parts of 20 Baume hydrochloric acid and stirring the slurry at 5-10° C. for 40 minutes. Excess nitrite was quenched with sulfamic acid. A small amount of an antifoam agent was used to control the foam. A coupler slurry was prepared by dissolving 15.4 parts of sodium salt of 2-hydroxy-naphthalene-6-sulfonic acid (Schaeffer's Salt) in 500 parts of water containing 4.5 parts of 50% sodium hydroxide. Alkylamine-guanidine polyoxyethanol (1.7 parts) was added and the slurry was cooled to 20° C. with ice. The diazo slurry was coupled into the coupler slurry over a period of 30 minutes while maintaining the pH at 6-8. The pH of the slurry was then raised to 9.8 by addition of 10 percent solution of sodium hydroxide and the mixture is stirred 20 minutes. Alkylamine-guanidine polyoxyethanol (1.0 part) was added, the pH was adjusted to 6.5 and 24 parts strontium nitrate were added. The slurry was stirred for 50 minutes at pH 7.5, and heated at a rate of approximately 1° C./minute to boiling and boiled for two hours. The slurry was then iced to lower than 50° C. and filtered; the filter cake was washed with water, dried overnight at 80° C. and pulverized to give a red pigment powder.

Referring to Figure 1 (following the signature page), an X-ray diffraction pattern of the pigmentary compound of the claims shows high diffraction intensity at diffraction angles (CT: 2.0s, SS: 0.020 dg, WL: 1.5406) of 10.4°, 17.5°, 18.7°, 21.6° and 23°, moderate diffraction intensities at 14.4°, 15°, 24.4°, 24.8°, 25.2° and 26.2° and relatively low diffraction intensities at 15.4°, 17.5°, 17.8°, 19.3°, 20°, 21°, 21.8°, 26.6°, 28.6°, 30.2°, 31.6°, 32.1°, 34.8° and 38°. The X-ray diffraction pattern indicates that the material is of a crystalline nature. The peaks of Figure 1 are sharp and accountable thus permitting its ready identification.

The compound described in CAS Registry Database compound #250639-69-1 and the FDA Docket No. 99F-2080 was made by repeating the procedure above except that, after coupling, alkylamine-guanidine polyoxyethanol was not added to give a red pigment powder.

Referring to Figure 2 (second page after the signature page), an X-ray diffraction pattern of the compound described in CAS Registry Database compound #250639-69-1 and the FDA Docket No. 99F-2080 shows relatively low diffraction intensities at 21.3°, 23° and 28°. The X-ray diffraction pattern, which does not contain sharp and accountable peaks, indicates that the material is poorly crystalline.

As can be further seen by Figure 2, the compound of the CAS Registry Database compound #250639-69-1 and the FDA Docket No. 99F-2080 do not fall within the scope of claim 1 because the characteristic X-ray diffraction intensities at the required diffraction angles are absent.

Tests were conducted to determine pigmentary properties of the two aforementioned compounds. A mixture of 0.5 part pigment (either the pigment of the invention or of CAS Registry Database compound #250639-69-1/FDA Docket No. 99F-2080 (CAS/FDA)), 5.0 parts titanium dioxide (DuPont Ti-Pure R-960) and 500 parts high density polyethylene (Solvay T50-2000-G) was shaken on a paint shaker to uniformity, then injection molded at 232° C. in a 30 ton Battenfield machine. Spectrophotometric values were measured with a Macbeth Color-Eye (specular component included, large area) to give the apparent strength and hue angle under Illuminant D, 10°, shown in the Table.

TABLE

Pigment	Hue Angle	Chroma	Apparent Strength (K/S)
Invention	4.7	45.4	14.4 (standard)
CAS/FDA	8.0	8.6	0.92 (93.6% weaker)

Hue Angle was evaluated based on a hue circle where 0°/360° corresponds to red, 90° corresponds to yellow, 180° corresponds to green, and 270° corresponds to blue. Chroma refers to brightness and color intensity. The higher the Chroma value, the brighter and more intense the pigment. The higher Chroma value of the inventive

pigment of the claims indicates that it is markedly brighter and intense compared to the compound of CAS Registry Database compound #250639-69-1/FDA Docket No. 99F-2080. K/S value measures the color strength of a pigment. The higher the K/S value, the stronger the pigment. The higher K/S values of the pigments of the inventive pigment of the claims indicates that it is markedly stronger compared to the compound of CAS Registry Database compound #250639-69-1/FDA Docket No. 99F-2080.

The pigmentary compound of the claims is clearly different than the non-pigmentary, poorly crystalline compound of CAS Registry Database compound #250639-69-1/FDA Docket No. 99F-2080. The difference can be objectively identified by the high diffraction intensity at diffraction angles described in the claims (see claim 1 for example). That is, the X-ray diffraction data indicates the compound of the claims is different in structure (crystal structure) and chemical properties (color) from the compound of the cited art.

I, Amrit Bindra, hereby declare that all the statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued therein.

Amrit Bindra, Ph.D.

December 27, 2004

Date